

"Dedicated to Public Service"

THE RADIATOR



W6RHC
IRL #8170
Echolink #322788



<http://www.gearsw6rhc.org>

P.O.Box 508 Chico, CA 95927-0508

Founded: August 13, 1939

February 2016

Coming Events

O.A.R.S. GENERAL MEETING

Second Friday, of month, 7:00 p.m., at St. Paul's Church Parrish Hall, 1430 Pine St., Oroville

G.A.R.S. Second Thursday of month, 4:30 p.m. Lutheran Church Hall, Artois; 4:30 p.m.

G.E.A.R.S General Meeting, third Friday of month, Butte County Search and Rescue Bldg., Chico. Social hour 6:30, meeting at 7:00.

Board Meetings: 2nd Saturday of month

Butte A.R.E.S. MEET: fourth Friday, at Butte County Search and Rescue Building.

FCC EXAMS - GEARS VEC

First Sunday of every even numbered month.
At the Butte County Search and Rescue Building.
Written test at 2:00 p.m. For information or pre-registration call Tom Rider -W6JS; 530-893-9211

Club Events: News and items of interest
GEARS Calendar...all inside.

Website: www.gearsw6rhc.org
www.gearsw6rhc.org



Picture courtesy EVARC

The Prez' Says:

QST de KA6GND



Hello all, I hope that with all of the rain that we have been having it is giving you some time on the air, communicating in whatever your mode and band of choice is!! It was wonderful seeing so many of you at our first club meeting of this year. Our next general club meeting will be held on Friday February 19th. Our program will be a mystery guest speaker, actually several so come on out and join into the fun!

Thank you to our teaching team of Rick -KI6VOS, Tom -W6JS, Michael - N6FAV and Chair Gene - WA6ZRT for your hard work and expertise in putting on the one-day Tech (Technician) class this coming Saturday morning at 9am - FB (fine business) on that Team! Thanks also go to Tom and the VE (Volunteer Examiner) team for the testing session this coming Sunday afternoon at 2pm.

We held the first Board meeting of the new year and I am excited and confident that we will accomplish a lot of great new things as a club this year. Thank you Rick, KI6VOS for taking on the role of Net Manager in organizing and streamlining the Tuesday night 2 meter net control operators, we appreciate everyone's time as NCS (Net Control Station) each week. Everyone, if you have 2 meter capability please check in to the net, share what's going on with you during the roundtable, let your signal be heard!

Continued on page 3

Board of Directors Meeting: Jan 9 2016

ATTENDANCE Vice-President, past president, one board member not present.

MEMBERSHIP APPLICATIONS: none

OLD BUSINESS:

Minutes of the last board meeting approved.

Treasurers report: Working on obtaining new bank possibly Tri Counties.

NEW BUSINESS:**Net Committee**

Goal: Engage more members (and, non-members); polish operating skills; foster more discussion

Initial Cohort: Rick (Chair), Dick, Lester, Evelyn, Ray Will “call” for member interest at Regularly Scheduled Club Meetings

Unified Roster, Common Script, Coordinated and published schedule—with “fill-in’s” for absences.

Technology (Non-Radio) Committee

Goal: Efficiently and effectively enhance GEARS’ “Digital Presence”

Initial Cohort: Rick (Chair), Stephen McDermott, Mike Favor.

Will “call” for member interest at Regularly Scheduled Club Meetings.

Digital/Online Infrastructure (e.g., domain registration, website, social media).

Will work with “Content” {Committee?} to increase GEARS’ “Digital Presence”.

ENHANCEMENTS TO EXISTING FUNCTIONS

Membership: New Member Orientation (Ham Radio, ARRL, Club, Programs, Contests, Etc).

Meetings: “Elmer Bar” a designed spot for anyone to obtain Elmer-assistance (e.g., technical questions, operating procedures, licensing).

Repeater: Designated Repeater Committee Responsible for all repeater-related functions (e.g., Trustee, planning, licensing, operations, NARCC, maintenance) Initial Cohort: Dick, Dale, Stephen McDermott.

Discussed, but not acted upon

Alliances Committee: Maintain and enhance relationships with ARRL (National and Region), other local clubs (e.g., OARS, GARS), ARES, {NARCC-too?}.

ADJOURNMENT: 15:23 hr.

Dale Anderson,
Secretary

MINUTES OF GENERAL MEETING for Jan 15 2016

PROGRAM: QRP by Dennis Power AB6QR.

ATTENDANCE: All present.

ANNOUNCEMENT:

The 146.520 (simplex) net on Thursdays is having a breakfast at the Cozy Diner Sunday the 17th.

A club a breakfast Sat Feb 27 Farmers Skillet. 9am.

The next program will be contesting by Robert, W6RQR.

Next board meeting is on 13 Feb at 9am at BloodSource

Stephen McDermott has donated a ARRL 1948 Radio Handbook that is labeled W6RHC N.O. Dickson 779 East Seventh St. and an antenna book (1993).

VEC: none

MINUTES: Approved the minutes from Dec. meeting.

TREASURER: Is being compiled for the audit.

OLD BUSINESS: none

NEW BUSINESS:

Field Day coordinator this year will be will be Michael Favor N6FAV.

VEC is Tom Rider, W6JS.

Classes Gene Wright, WA6ZRT.

Net Manager is Rick Hubbard, KI6VOS.

Sunshine person will be Margie Wolske, KJ6SEV.

ADJOURNMENT: 20:25 hr.

Dale Anderson,
Secretary



The Prez Says continued:

We are planning a wonderful Field Day this year. Michael Favor N6FAV has agreed to be Field Day Chair this year, so mark your calendar for June 24-26. Michael will be looking for the help of many to make this a huge, fun, interesting and educational event. Any time during that weekend that you can participate would be valuable, so let Michael know how you would like to participate.

This month we will be holding our first club breakfast in many years on February 27th at 9am at the Farmer's Skillet located at the corner of Rio Lindo and Cohasset Rd, just off of Mangrove in Chico. We will join together in their back room to eat, laugh and tell tall ham stories. Come on out and meet new hams and rekindle old friendships.

A survey will be coming to you soon regarding our club. The club is nothing without it's members and so your input is so much appreciated and valued. We are looking for your input on what the club means to you, what you would like to get out of the club and put in to it.

Our club is made up of varied years of experience and knowledge. I will endeavor to ensure that we as a club are inclusive and helpful to our newer hams and those to come down the wire soon. That's why as you may notice in this article I spell out acronyms as we all may not know what they stand for. Look for more of these types of things this year at the club meetings. We need to be mentors to the new as mentors once were to most of us as we entered this incredible hobby.

"The Sky's the Limit With Amateur Radio"

73 (best regards),
Larry Marcum, KA6GND
GEARS President

***WA6AKF— Steve McDermott
gifted GEARS Library***

GEARS Ham materials library was recently enhanced by donation of a 25th edition, 1948, (2nd printing) of a volume of "The Radio Amateur Handbook". Contacted by a fellow Ham (name and location unknown to this writer) Steve was asked if he desired to purchase the edition offered. Stephen unequivocally assented.

This volume carries a previously stamped article of ownership, indicating the possessor was one :

N.O. Dixon, W6RHC

77 9 E 7th St., Chico, Ca

N. O. Dixon, was an early pioneer of Ham Radio in Chico, one of the earliest individuals active in establishing Ham enterprises in the Chico and surrounding areas, and ultimately leader of the foundation of GEARS. GEARS honored Mr. Dixon by adopting his call sign as the permanent call sign for GEARS – W6RHC.

The Frontispiece of the volume is also interesting ...bearing the following publisher's inscription:

25th Edition, Second Printing

The Radio Amateur Handbook

ARRL

First Printing: Dec. 1947—100,000 copies

Second Printing: January 1948 — 50,000 copies

"Of the previous twenty four editions, 1,748,250 copies were published"

Price of the edition Dixon had purchased

\$3.00.



Dennis Powers-AB6QR- speaker for January program, held members spellbound while speaking of QRP CW.

His advice for QRP CW: Use lowest power necessary, 5 W or less; He has experimented over many years with QRP-And with QRPp—very low power milliwatts. He enjoys phenomenal success:

He has contacted fellow hams in all states using only 5 w. Using 1(one) watt, he has made contacts in 28 states and uses only 10 milliwatts per contact.

One of his prime interests is to QRPp at the lowest possible setting, at one time he dropped below one watt, and he received a response!

“No matter how much power (or little power) you use, someone always answers back.”

“Establish your goals, control the length of your rag chew, Work all states, work all countries”

For those interested in expanding Their knowledge and understanding of QRP, AB6QR recommended the following books:

“The Joy of QRP”

“History of QRP”.

**“The New American Amateur”
(Author Robert Crews,
Published in 1924)**



NEW YEAR'S DAY SOTA / NPOTA ACTIVATION

This is the month the ARRL 2016 National Parks Operating on The Air (NPOTA) event (throughout 2016) to help celebrate the 100th anniversary of the National Park System, kicks off! There are numerous awards, including Five Star Activator and a special chaser award for those who contact activators in 75% of 59 of the US National Parks. Use of Log Book of the World is required, like the 2014 ARRL Challenge."

"There are some 1,929 SOTA summits "cleanly" within the boundaries of the 432 National Park units. The NPOTA Challenge is patterned after the DXCC program with each National Park unit being an "entity". The awards program has two tracks, one for Chasers and one for Activators. A separate leaderboard tracks the top participants in each track. QSOs with a NPS Unit scores points. Likewise for Activators. There are special awards for each track. Note the similarity to the SOTA Awards program. See <http://www.arrl.org/npota3> for more information about the NPOTA—National Parks On The Air-ARRL operating event."

SOTA -Summits on the Air -is an award scheme for radio amateurs and shortwave listeners that encourages portable operation in mountainous areas. SOTA has been carefully designed to make participation possible for everyone - this is not just for mountaineers! There are awards for activators (those who ascend to the summits) and chasers (who either operate from home, a local hilltop or are even Activators on other summits).

Note that SOTA is an award program not a club or society; as such you can't be a "Member" of SOTA but you can certainly be a participant!

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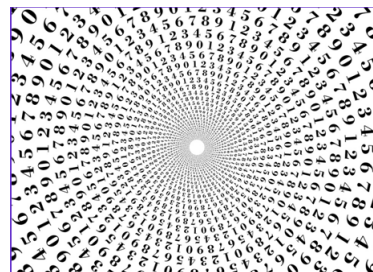
Margie Wolske—KJ6SEV

Has volunteered to be "Sunshine Person" for our club. Margie will send Club cards to individual members who are ill, lost a family member, or for one of the many various reasons the Club should keep in contact with a member.

For Margie to meet this commitment members are asked to please contact her upon learning of such a need. Thank you Margie!

Margie contact # is 530-899-8927

**Newly Discovered Prime Number Is a Whopping
22 Million Digits Long-
It's the longest one ever found.**



Prime numbers are an interesting little quirk of mathematics. Though they're easy to define—numbers that are only divisible by themselves—they're difficult to find; there's no reliable way to come up with new ones besides just counting up and testing every one to see if it's prime or not. That's what the [Great Internet Mersenne Prime Search](#) (GIMPS) has been doing, and its most recent find is 22 million digits long, the largest ever found.

The newly-found prime is most succinctly written as $2^{74,207,281} - 1$ and is 22,338,618 digits long if written all the way out. The previous longest prime, found in 2013, was $2^{57,885,161} - 1$, five million digits shorter than the new champ.

The GIMPS software runs on many computers—[you can put it on yours too](#)—but [Curtis Cooper](#) at the University of Central Missouri in Warrensburg had the privilege of owning the computer that made the find in September of last year. A bug kept the software from sending out an alert email, so the number went undiscovered by humans for months. In the meantime other computers just keep crunching on. It's only a matter of time before we find the first billion-digit prime.

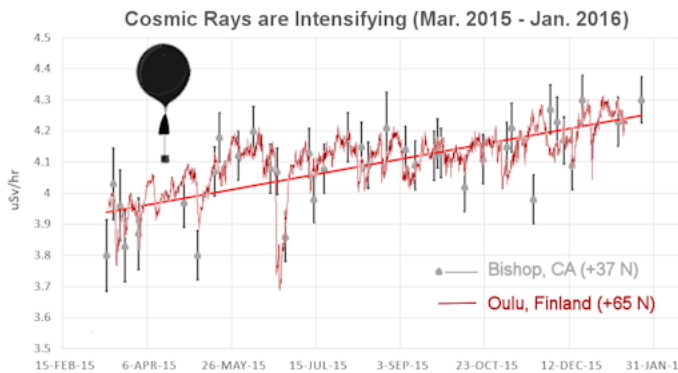
Source: [The New Scientist](#)



Happy Valentine Day, Everyone!

INTENSIFYING COSMIC RAYS:

For the past year, [neutron monitors](#) around the Arctic Circle have sensed an increasing intensity of cosmic rays. Polar latitudes are a good place to make such measurements, because Earth's magnetic field funnels and concentrates cosmic radiation there. Turns out, Earth's poles aren't the only place cosmic rays are intensifying. Spaceweather.com and the students of [Earth to Sky Calculus](#) have been launching helium balloons to the stratosphere to measure radiation, and they find the same trend over California:



In the plot, neutron monitor measurements from the University of Oulu [Cosmic Ray Station](#) are traced in red; gamma-ray/X-ray measurements over California are denoted in gray. The agreement between [the two curves](#) is remarkable. It means that the intensification of cosmic rays is making itself felt not only over the poles, but also over lower latitudes where Earth's magnetic field provides a greater degree of protection against deep space radiation.

Cosmic rays, which are accelerated toward Earth by distant supernova explosions and other violent events, are an important form of space weather. They can [seed clouds](#), [trigger lightning](#), and [penetrate commercial airplanes](#). Indeed, our measurements show that someone flying back and forth across the continental USA, just once, can absorb as much ionizing cosmic radiation as 2 to 5 dental X-rays. Likewise, cosmic rays can affect mountain climbers, high-altitude drones, and astronauts onboard the International Space Station.

This type of radiation is modulated by solar activity. Solar storms and CMEs tend to sweep aside cosmic rays, making it more difficult for cosmic rays to reach Earth. On the other hand, low solar activity allows an extra dose of cosmic rays to reach our planet. Indeed, the ongoing increase in cosmic ray intensity is probably due to a decline in the solar cycle. Solar Maximum has passed and we are heading toward a new Solar Minimum. Forecasters expect solar activity to

sharply in the years ahead, and cosmic rays are poised to increase accordingly. Stay tuned for more radiation.

HEY, THANKS! The cosmic ray research of [Earth to Sky Calculus](#) is 100% crowd-funded. The latest flight on Jan. 22nd was sponsored by ABC affiliate KOMO TV of Seattle, Washington. KOMO's donation of \$500 paid for all the supplies necessary to get the high-altitude balloon off the ground. To say "thanks", we flew their logo to the edge of space.



Readers, if you would like to sponsor a balloon mission and see your favorite photo or logo in the stratosphere, please [contact Dr. Tony Phillips](#) to book your flight. A less costly way to support this research is to buy an [Edge of Space Valentine's Card](#).

(from [Spaceweather.com/Earth to Calculus.com](#))

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Amateur Radio High Altitude Ballooning

(ARHAB) is the application of analog and digital [amateur radio](#) to [weather balloons](#) and was the name suggested by Ralph Wallio (amateur radio callsign W0RPK) for this hobby.

Often referred to as "The Poorman's Space Program", ARHAB allows amateurs to design functioning models of spacecraft and launch them into a space-like environment. Bill Brown (amateur radio callsign WB8ELK) is considered to have begun the modern ARHAB movement with his first launch of a balloon carrying an amateur radio transmitter on 15 August 1987. The first recorded ARHAB launch, however, is recorded to have taken place in Finland by the Ilmari program on May 28, 1967.

Continued on page 6

Con't from page 5:

An ARHAB flight consists of a balloon, a recovery parachute, and a payload of one or more packages. The payload normally contains an amateur radio transmitter that permits tracking of the flight to its landing for recovery. Most flights use an [Automatic Packet Reporting System](#) (APRS) tracker which gets its position from a [Global Positioning System](#) (GPS) receiver and converts it to a digital radio transmission. Other flights may use an analog beacon and are tracked using [radio direction finding](#) techniques. Long duration flights frequently must use [high frequency](#) custom built transmitters and slow data protocols such as [RTTY](#), [Hellschreiber](#), [Morse code](#) and [PSK31](#), to transmit data over great distances using little battery power. Use of amateur radio transmitters on an ARHAB flight requires an amateur radio license, but non-amateur radio transmitters are possible to use without a license.

In addition to the tracking equipment, other payload components may include sensors, data loggers, cameras, [amateur television \(ATV\)](#) transmitters or other scientific experiments. Some ARHAB flights carry simplified payload packages called [BalloonSats](#).

A typical ARHAB flight uses a standard latex weather balloon, lasts around 2-3 hours, and reaches 25 to 35 km in altitude. Experiments with zero-pressure balloons, superpressure balloons, and valved latex balloons have extended flight times to more than 24 hours. A zero-pressure flight by the [Spirit of Knoxville Balloon Program](#) in March 2008 lasted over 40 hours and landed off the coast of Ireland, over 5400 km from its launch point.

On December 11, 2011 the California Near Space Project flight number CNSP-11 with the call sign K6RPT-11 launched a record breaking flight traveling 6,236 miles from [San Jose, California](#) to a splash-down in the [Mediterranean Sea](#). The flight lasted 57 hours and 2 minutes. It became the first successful US transcontinental and first successful transatlantic amateur radio high altitude balloon.

Additional record flights are available on <http://arhab.org>.

Each year in the United States the Great Plains Super Launch (GPSL) hosts a large gathering of ARHAB groups. For more information check with <http://superlaunch.org>

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[Amateur Radio High Altitude Ballooning \(arhab\)](#)

"The poor mans space program"

Next Launch: 2016-02-12 @ 09:30:00 by Forest-view Middle School HAB Club (FMS) from Forest-view Middle School, Baxter, MN



Caps embroidered with your name and your call sign may be ordered by contacting WA6ZRT -Gene Telephone #530 -345-3515

VEC TESTING

2:00 p.m.

February 7, 2016

April 3, 2016

**AT BUTTE COUNTY
SEARCH & RESCUE
BUILDING**

All Classes

**Technician, General and
Extra.**

Contact:

Tom Rider-W6JS



530-893-9211

Rustyboy rider@aol.com

Could Super Metallic Glue Replace Soldering and Welding?

Or...No need to risk frying the electronics of a circuit board.

A new type of metallic glue can bond two pieces of metal together at room temperature. Initial testing shows that the solidified glue is thermally and electrically conductive, and the bond is about as strong as a traditional weld, opening up a number of potential applications in electronics design and infrastructure. The [MesoGlue](#) is most likely to be used in the electronics industry and could help [pack circuit board components more tightly](#) than is possible with soldering, creating more efficient arrangements.

MesoGlue, developed by Hanchen Huang, a Northeastern University professor of mechanical and industrial engineering, works by interlocking metal nanorods that are treated with a coating of gallium or indium. The two substances are kept separate until a bond is desired. The gallium-coated nanorods are applied to one metal surface, while the indium-coated rods are applied to the other surface you wish to glue. The nanorods, once applied, stand up at an angle like the teeth on a comb. When the two surfaces are pressed together, the nanorods interlock in a similar way to Velcro. The gallium and indium react with each other to form a liquid that oozes into any open space. The liquid mixture then reacts with the exposed metal cores of the nanorods, solidifies, and binds the two surfaces together.

It requires some pressure to make sure the bonding process works, but that's it. No additional application of heat is necessary, so the bonding process is less likely to damage electronic components. A [paper](#) detailing the glue's development was recently published in *Advanced Materials & Processes*.

"Hot processes like soldering and welding can result in metallic connections that are similar to those pro-

duced with the metallic glue, but they cost much more," says Huang on Northeastern University's research blog [iNSolution](#). "In addition, the high temperature necessary for these processes has deleterious effects on neighboring components, such as junctions in semiconductor devices. Such effects can speed up failure and not only increase cost but also prove dangerous to users.

"Besides circuit board components, the glue could serve as a replacement for thermal greases used in electronics. You could even glue your CPU directly to the heatsink to improve heat dissipation, as long as you're okay with them never coming apart again. Huang also believes the metallic adhesive could be used in solar panel technology and as a more efficient way to attach pipe fittings.

At this point MesoGlue can only be applied in a laboratory, but Huang and his team are working to develop a commercial version of the product that can be used at home. Just make sure you want whatever you're gluing stuck together forever before you go mixing the two parts of the metal adhesive.

Source: [Northeastern University](#) via [Extreme Tech](#) (Popular Mechanics December-2015)

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PREZ QUIZ January Meeting: What is:

QRG? Means: What frequency are you on and what frequency am I on?

QRL? Means: Is the frequency in use?

QRN? Means: Man made noise

The GEARS Newsletter Staff:**Editor and Publisher**.....Dorothy Post**Printing & Distribution** snail mail: Evelyn Weir**Website**...Stephen McDermott W6AKF

The Radiator is a monthly publication of the Golden Empire Amateur Radio Society (GEARS). It is the policy of the Editor to publish all material submitted by the membership provided such material is in good taste, relevant to amateur radio, of interest to GEARS members, and space is available. Please send all submissions to the Editor – Dorothy Post by the last day of the month through the following medium: E-mail: dj@posthouse.us

Club Officers: (Board of Directors)**President**Larry Marcum-ka6gnd**Vice President**..... Stephen Wolske-kf6hss**Secretary** Dale Anderson-kk6evx**Treasurer**.....Rick Hubbard-ki6vos**Past President**Anna Horn Kg6goa**Director**..... Tom Rider-W6JS**Director**.....Gene Wright-wa6zrt**Director**.....Raymond Foulks-kg6mrk**Club Meetings****General Meeting** Third Friday 7:00 PM**Board Meeting** Second Saturday**GEARS Club Net****Tuesdays** 8:00 PM 146.850 MHz-PL 110.9**GARS Club Net:** Monday, 19:30 147.105+Mhz
PL 110.0**Thursdays Simplex Net** 7:30 p.m. 146.52**Sacramento Valley Traffic Net****Nightly** 9:00 PM 146.850 MHz-PL 110.9**ARES Nets:****Butte** Mondays 20:00 146.850 MHz-PL 110.9**Yuba Sutter** Thursdays 19:00 146.085+MHz PL 127.3**Glenn** Thursday 19:30 147.105 MHz +PL 100.0**Other Nets:****Sac Valley Section Net**—7:00 PM 2nd Wed of the
month 146.085 MHz+PL 127.3**440 Wed. Night** 8:00 PM Wednesday 440.650 MHz**Golden Bear** 7:00 PM Daily 3975 kHz**Willie Net** 8:00 PM Mondays 1930 kHz**Western Public Service System (WPSS)****Winter** 5:00 – 7:30 PM 3952 kHz**Summer** 6:00 – 8:30 PM 3952 kHz**ARISS (International Space Station)** Uplink 144.490
MHz Downlink 145.800 MHz**Hope-1 satellite:** all uplinks are in 145Mhz band:

All downlinks are in 435Mhz band

...California Traffic Net: 3906 KHz nightly @6:00 pm

For traffic listing & @6:30 p.m. for roll call.

TUBE OF THE MONTH**GU-33A, ГY-33A**

The GU-33A or ГY-33A is 150 watt, water cooled, tetrode with a maximum frequency of 500 MHz made in Russia. The GU-33B is the same tube with forced air cooling.

Length = 3.19" Diameter = 1.75"**Max voltage = 1500****Max current = 1 amp****Fil voltage = 5.7 to 6.9****Fil current = 4.7 to 5.6 amps****N6jv.com**

Date	Time	Event	Location	Contact party
Saturday, Feb/ 6	9-5 pm TECH CRAM SESSION	TECH CLASS CRAM SESSION	Butte Co. Search & Rescue Building 2591 Morrow Lane, Chico	For Cram Course Gene Wright 530-345-3515
Sunday, February 7, 2016	2:00 p.m.	VEC—Exams		For VEC Exams Tom Rider 530-893-9211
Thursday February 11, 2016	4:30 p.m. Board and General Meeting .	GARS-Glenn Glenn Amateur Radio Society General Meeting, & Amateur Radio Emergency Services	Lutheran Church Hall: 565 Main Street Artois	Albert Leyva 530-567-5979
Friday, February 12, 2016		OARS Oroville Amateur Radio Society General Meeting	St Paul's Church Parrish Hall 1430 Pine Street Oroville	Ron Osborne-kd7uhf 530 589 1834 kd7uhf@yahoo.com
Saturday Feb.13	Board meet: Blood Source Bldg 555 Rio Lindo Ave.	GEARS Board of Directors Meet Members are Invited!	Blood Source Blood Source Bldg 555 Rio Lindo Ave	Larry Marcum, KA6GND 530 345 5399 ka6gnd@gmail.com
Friday February 19, 2016	General Meeting Social 6:30 p.m. Program: Robert- W6RQR:contesting At 7:00 p.m. General meeting 8:00 p.m.	GEARS Golden Empire Amateur Radio Society	Butte County Search and Rescue Building 2591 Morrow Lane Chico	Larry Marcum, KA6GND 530 345 5399 ka6gnd@gmail.com
Wednesday Feb. 17	146.520-Simplex Group- Breakfast get to- gether	Thursday Simplex Club Net Group	Cozy Diner Mangrove Ave. Chico	
Saturday Feb. 27	GEARS Club Breakfast 9:00 a.m.	GEARS	Farmer's Skillet Corner of Rio Lindo & Cohasset Chico	

Free of charge to ARRL members...[Subscribe](#) to the *ARES E-Letter* (monthly public service and emergency communications news), the *ARRL Contest Update* (bi-weekly contest newsletter), Division and Section news alerts -- and much more! And did you know: You may Find ARRL on [Facebook](#)! Or Follow ARRL on [Twitter](#)!